

NOTES ON TWO SPECIES OF ARAUCARIA IN NEW GUINEA AND A PROPOSED NEW SECTION OF THE GENUS

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ON MY WAY BACK to Australia from the Solomon Islands in November, 1945, I was delayed at Lae in New Guinea, awaiting transport, and decided to visit the Bulolo Valley at Wau for the purpose of seeing the fine *Araucaria* forests of that region.

Before the war, Wau was the centre of the gold-mining industry of the Mandated Territory of New Guinea, and the town and surrounding district carried a white population of approximately 2000. Lack of transport had fortunately prevented the exploitation of the magnificent forests of *Araucaria Klinkii* Lauterb. and *A. Cunninghamii* Ait. These two species grow intermingled and dominate the rain-forest on the ridges and hillsides. The former is an especially magnificent tree and Mr. J. B. McAdam, Chief of the New Guinea Forest Service, informs me that he still hopes to find a specimen 300 ft. high. By actual measurement he has found trees approaching this height, but not quite attaining it. The following notes on their systematics and their distribution in New Guinea are offered.

Araucaria Cunninghamii Ait. in Sweet, Hort. Brit. 475. 1827; F. Muell. Vict. Nat. 4: 121. 1887, Descript. Notes Pap. Pl. 9 (2): 65. 1890; Lauterb. in Engl. Bot. Jahrb. 50: 51. 1913; C. E. Lane-Poole, Forest Resources Papua and New Guinea 73. 1925; C. T. White in Jour. Arnold Arb. 10: 200. 1929.

NEW GUINEA: Mt. Obree, Sayer (ex Lauterb. l.c.), *C. E. Lane-Poole* 376, Feb. 1921 (young cones); Hanep, common along the ranges on each side of the Ramu from 2000–4000 ft. alt., *C. E. Lane-Poole* 639, Feb. 1924 (immature cones); Owen Stanley Range, between Mts. Brown and Clarence, *L. J. Brass*, May 1926 (leaves only); Wau, alt. 3000 ft., common on ridge rain-forest above the Bulolo River, *C. T. White*, N.G.F. 1465, Nov. 1945 (young cones and broken fallen cones; large tree 150 ft., bark thick rough, dark brown almost blackish).

DISTRIBUTION: E. Australia and E. New Guinea.

Lauterbach, l.c., mentions that he could find no difference between Sayer's specimen and the type from E. Australia. The species is abundant in Eastern New Guinea on the Owen Stanley Range and ranges north of it. The trees in the field are very similar to those of Australia, where the species is very common from sea-level to an altitude of 3000 ft. and shows considerable variation in form. I have compared the New Guinea specimens available to me with much Australian material and can find no essential differences. The closely allied *A. Beccarii* Warb. from north-west New Guinea, judging from figures published by Miss Gibbs in the Phytogeography and Flora of the Arfak Mts., p. 84, fig. 5, seems to differ chiefly in the very much larger cone and cone-scales, the latter measuring 4 cm. × 8 cm. (exclusive of the indurated point) whereas in *A. Cunninghamii* Ait. they only average half this size.

Araucaria Klinkii Lauterb. in Engl. Bot. Jahrb. 50: 48. 1913; C. E. Lane-Poole, Forest Resources Papua and New Guinea 72. 1925.

NEW GUINEA: Mountains of the Upper Waria River, 2000 m. and more above sea-level, *Klink*, TYPE, Nov. 1910 (ripe cones); mountains behind Finschhafen, alt. 2000–3000 ft., on the hills of the Upper Ramu River, *C. E. Lane-Poole 642* (leaves only); Wau, alt. 2500 ft., abundant in rain-forest ridges and hillsides above the Bulolo Valley, *C. T. White, N.G.F. 1454*, Nov. 1945 (green male amenta and fallen cones; large tree 200 ft., bark very dark brown thick and rough).

As is well known, the species of *Araucaria* fall naturally into two well-defined sections:

(1) COLYMBEA Endl. in which the leaves in adult trees are large and more or less spreading, the cones large, the seeds heavy and not adapted to wind-distribution, cotyledons hypogeal, endosperm transferred in germination into the underground swollen hypocotyl.

(2) EUTACTA Endl. in which the juvenile leaves are acicular and spreading, the adult ones small and imbricate, the seeds comparatively light and with the accompanying winged scale, adapted to wind-distribution, cotyledons epigeal and spreading in germination like those of *Pinus*, hypocotyl slender.

Lauterbach (l.c.) placed *A. Klinkii* Lauterb. in the section EUTACTA, where I feel that its true affinities lie. However, Pilger in the second edition of *Die Natürlichen Pflanzenfamilien* transferred it to the section COLYMBEA. The only affinity with this section is the large size and more or less spreading character of the leaves. He also includes here the closely allied *A. Hunsteinii* K. Sch. and *A. Schumanniana* Warb. Warburg (*Monsunia* 1: t. 10) figures both these species and shows their leaves to be more spreading than in *A. Klinkii* Lauterb. In the field, on the general appearance of the branchlets, these three trees certainly resemble members of the section COLYMBEA more than EUTACTA, but in the more essential features, the character of the seed and scale, and the method of germination, they definitely agree with the section EUTACTA. The description of EUTACTA could be amended to include these New Guinea species, but it seems preferable to propose a new section to include them.

Sectio *Intermedia* sect. nov.

Folia juvenilis acicularia, patentia, parva, adulta magna (5–10 cm. longa) patentia vel leviter imbricata; semina cum squamis alatis a ventis disseminata, cotyledonibus 2 in germinatione patentibus supra terram portatis.

Three species in North-east New Guinea, *A. Hunsteinii* K. Sch., *A. Schumanniana* Warb. and *A. Klinkii* Lauterb. though it is possible that all three represent forms of one rather variable species. The two former are unfortunately known only from the type localities.

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